

Information technology in ENT: are we ready to be ‘Connected For Health’?

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Abstract

The NHS Connecting for Health agency continues to implement the national programme for information technology within the National Health Service (NHS). In preparation, NHS employees are being encouraged to develop their information technology skills via the European computer driving licence training course.

A postal survey of British Association of Otorhinolaryngologists members was undertaken to evaluate their levels of information technology training, competency and knowledge. Three hundred and thirty-six surgeons responded.

Most respondents had received no formal information technology training. Only 3.9 per cent had taken the European computer driving licence course.

Most surgeons felt comfortable using word processing and presentation software but were less comfortable with other applications. Junior surgeons were more confident in all areas of information technology application than senior surgeons.

Seventy-two per cent of surgeons wanted more information technology training. Most felt that such training should be routine at undergraduate and postgraduate level.

With the national programme committed to improving information technology infrastructure within the NHS, more formal training should be provided to ensure a basic standard of information technology competency amongst ENT surgeons.

Key words: Integrated Health Care Systems; Informatics; Computers; Great Britain

Introduction

The NHS Connecting for Health agency was established in April 2005 and was charged with implementing the national programme for information technology within the NHS.^{1–3} This programme is currently being implemented across the NHS in an attempt to ‘enable the delivery of better care to patients by staff equipped with the latest information at their fingertips’.³ The national programme for information technology includes the development of electronic patient records, ‘choose and book’ clinic appointments, digital radiography and picture communications systems, electronic prescriptions, and secure electronic communication between healthcare professionals.

It is estimated that 800 000 NHS staff will become direct users of the programme’s products and services.⁴ In order to successfully implement the programme, potential users will require training in the new systems. The NHS Connecting for Health agency states that some computer skills and information technology familiarity will be prerequisites for using the

new systems.³ Whilst no specific training in the national programme for information technology systems is currently available, staff who wish to prepare are advised to undertake the European computer driving licence training course.³ This internationally recognized information technology qualification is fully supported by the NHS and forms the core of the NHS basic information technology skills service. Enrolment in the European computer driving licence training course is free for all NHS employees.

The European computer driving licence course consists of seven modules covering a range of information technology knowledge and applications. Core modules test knowledge of basic information technology and the use and storage of data and communications. These modules include sections on data protection and securing stored data. The other modules cover applications such as word processing, presentation software, databases and spreadsheets. Previous studies have shown that many of these applications are already routinely used by healthcare professionals.^{5–7}

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The potential value of information technology in delivering effective and efficient healthcare has been well established.⁸ Despite the importance and proliferation of information technology, many doctors receive little or no formal training in computer use.^{5,7,9} A number of studies have demonstrated a marked variability in computer literacy amongst healthcare professionals.^{6,10} Such studies demonstrate a concern amongst healthcare professionals regarding their lack of formal computer training; when asked, most clinicians expressed a desire for further information technology training.^{5,7,9} Many felt that information technology training should be routine for all doctors, either at undergraduate or postgraduate level.^{7,9}

This study was designed to investigate the current level of information technology competency amongst UK ENT surgeons.

Materials and methods

A survey was conducted by postal questionnaire.

The contact details of ENT surgeons were obtained from the membership list of the British Association of Otorhinolaryngologists and a random sample of 600 members were sent a questionnaire. The questionnaire collected details of age and grade of surgeon, information technology training, computer and personal digital assistant (PDA) use, software competency, and knowledge of the data protection act (Appendix 1). All responses were coded and entered into Microsoft Excel and Statistical Package for the Social Sciences version 11 (SPSS Inc, Chicago IL, USA) software for the purpose of analysis.

Respondents were additionally coded into two groups depending upon the grade of surgeon, as defined by previous studies of information technology competency.⁵ Consultant, staff grade and associate specialist surgeons were defined as senior surgeons, and registrar, clinical fellow and senior house surgeons were defined as junior surgeons.

Results and analysis

Of the 600 questionnaires distributed, 335 (56 per cent) were returned completed.

Demographics of respondents

Most respondents were consultants or registrars (Figure 1). Seventy-three per cent were senior surgeons and 27 per cent were junior surgeons. Eighty-four per cent of respondents were male.

Computer ownership and usage

Ninety-six per cent of respondents owned a home computer and 82 per cent used computers at work. Both home and work computers were routinely used for internet and e-mail access, word processing, presentations and data management (Table I).

Thirty-nine per cent of respondents owned PDAs; these were mostly used for personal diary or address book functions (95 per cent) and as surgical logbooks (53 per cent). Other less frequently used applications

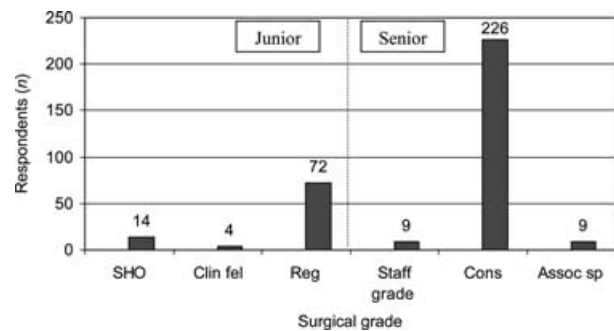


FIG. 1

Respondents by surgical grade. SHO = senior house officer; Clin fel = clinical fellow; Reg = registrar; Cons = consultant; Assoc sp = associate specialist

included medical references (19 per cent) and patient databases (18 per cent).

Information technology skill levels

Surgeons were asked to rate their competency in using various software packages, including those that are covered and assessed in modules three to seven of the European computer driving licence course (Table II). Most considered themselves good or average at using word processing and presentation software. Respondents were less competent (average or poor) with spreadsheets and databases. Most respondents felt they were poor at using statistical analysis software.

In all software categories, junior surgeons rated as significantly more competent than senior surgeons (Table III).

Information technology training

Very few respondents had received any information technology training during their primary (1.2 per cent) or secondary (10.4 per cent) education or at medical school (7.8 per cent). Since graduation from medical school, only 28.4 per cent had received any information technology training. This had mostly consisted of training whilst working. Only 9.6 per cent of respondents had completed an NHS information technology course and only 3.9 per cent had taken the European computer driving licence course. This suggests that UK ENT surgeons' information technology competency currently results from self-directed learning.

TABLE I

Application	RESPONDENTS' COMPUTER USE AT HOME AND WORK	
	Computer use (%)	
	At home	At work
Internet	92	86
E-mail	89	90
Word processing	87	73
Presentations	71	74
Data management*	62	64

*Spreadsheet or database.

TABLE II
RESPONDENTS' SUBJECTIVE INFORMATION TECHNOLOGY
COMPETENCIES

Application	Subjective competency (% (n))			
	Excellent	Good	Average	Poor
Word processing	19.4 (63)	32.4* (105)	37.0* (120)	11.1 (36)
Presentations	16.8 (51)	39.3* (119)	32.7* (99)	11.2 (34)
Spreadsheets	6.5 (19)	21.1 (62)	35.7* (105)	36.7* (108)
Databases	7.5 (22)	14.6 (43)	38.8* (114)	39.1* (115)
Statistical analysis	4.7 (12)	10.7 (27)	22.9 (58)	61.7* (156)

*Subjective competencies of >30%.

Seventy-two per cent of respondents wanted more information technology training. Of these, most wanted specific training in databases (78 per cent), statistical software (68 per cent) and electronic patient record use (53 per cent).

Most respondents thought that information technology should be routinely taught at undergraduate (74 per cent) and postgraduate (65 per cent) level.

Data protection act

The questionnaire included a section regarding the storage of data and the data protection act. This is relevant both to the European computer driving licence curriculum and to potential use of the national programme for information technology applications for research and audit purposes. Only half the respondents questioned felt they had adequate knowledge of the data protection act. Only 32 per cent of respondents had registered with the data protection act, whilst 42 per cent admitted to holding patient data on file.

Discussion

This survey represents the largest study of information technology competency and training

TABLE III

INFORMATION TECHNOLOGY COMPETENCIES OF JUNIOR AND SENIOR SURGEONS

Application	Subjective competency (%)			
	Excellent	Good	Average	Poor
<i>Word processing</i>				
Junior	32.6*	31.5*	36.0*	0
Senior	14.5	32.9*	37.2*	15.4
<i>Presentations</i>				
Junior	25.8	44.9*	29.2	0
Senior	13.1	36.6*	34.3*	16.6
<i>Spreadsheets</i>				
Junior	12.4	28.1	44.9*	14.6
Senior	3.9	18.1	31.4*	46.6*
<i>Databases</i>				
Junior	13.5	16.9	47.2*	25.5
Senior	4.9	13.7	34.8*	46.6*
<i>Statistical analysis</i>				
Junior	7.2	19.3	32.5*	41.0*
Senior	3.6	6.5	18.3	71.6*

All pairings show a statistically significant difference between the subjective competencies of junior vs senior surgeons; $p < 0.05$. *Subjective competencies of >30%.

amongst healthcare professionals in the UK, and it is the only such study of ENT surgeons.

Comparison with previous studies

When compared with previous studies, ENT surgeons showed comparable or marginally higher levels of competency in using common software packages.⁵⁻⁷ In addition, this study demonstrated a significantly higher level of information technology competency in junior doctors compared with seniors. This difference had been suggested in previous studies but had only been demonstrated in a few areas of information technology.⁵ It is felt that these previous studies may not have been large enough to demonstrate the true difference in information technology competency outlined in the present study.

The use of PDAs by surgeons has not been studied before. This survey showed that PDAs were being used by a third of ENT surgeons. Previous studies have demonstrated that the use of PDAs in daily activities can provide robust, effective and low cost support to doctors, especially at junior level.¹¹

Implications for the national programme for information technology

In this survey, ENT surgeons demonstrated a variable but generally good level of information technology competency. The low uptake of formal NHS courses, such as the European computer driving licence, and the poor levels of information technology training show that ENT surgeons' competency has mostly been achieved through self-directed learning. There are a significant number of surgeons who consider themselves poorly competent in many areas of information technology.

- **The NHS Connecting for Health agency states that some computer skills and information technology familiarity will be prerequisites for using the new systems**
- **The NHS Connecting for Health agency recommends taking the European computer driving licence course in order to prepare**
- **Computer literacy amongst healthcare professionals is variable**
- **This study is the largest survey of its kind and the only such survey of ENT surgeons**
- **Most ENT surgeons own home computers and have access to work computer systems**
- **There is considerable variation in information technology competency amongst ENT surgeons**
- **There are relatively low levels of formal training and European computer driving licence qualification amongst ENT surgeons**

If the implementation of the national programme for information technology is to be successful, we feel that ENT surgeons, and potentially all doctors,

require formal training to ensure a basic level of information technology competency. With the implementation of the national programme for information technology and the further development of such technology within daily medical practice, information technology will become an increasingly valuable tool in the provision of effective healthcare. As such, information technology skills should routinely be taught to all surgeons at either undergraduate or postgraduate level. This is especially the case for more senior surgeons, who reported a significantly lower level of current information technology competency.

Further links

Readers should note that NHS publications relating to Connecting for Health and the national programme for information technology can be accessed via the NHS Connecting for Health website, www.connectingforhealth.nhs.uk. Information regarding the European computer driving licence can be accessed at www.ecdl.nhs.uk.

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Appendix 1. Computer literacy in ENT questionnaire

Grade

SHO Clinical fellow Staff grade
 Registrar Consultant Associate specialist
 If consultant: sub-speciality (if any).....
 If registrar: what year of training?.....

Age

<25 25–34 35–44 45–54 55–64
 65–74 75 and over

Gender

Male Female

Year of primary medical qualification.....

Where did you receive your computer training?

(You may choose one, more than one, or none at all)
 School

If so, Primary school Secondary school/sixth form

Medical school

If so, Formal (computer skills/training module)
 University organized short course University clubs/societies

Post-graduate training

If so, Higher degree in computer sciences (or similar type of course) Formal (computer skills/training module as part of course/training)

Whilst training/working NHS course

Other

If so, from Books/manuals Private tuition/course ECDL Other (please state).....

Do you own a computer at home? Yes No

If yes...

What do you use your home computer for? (you may choose one, more than one or none at all)

Internet E-mail Design/presentation

Typing/word processing Spreadsheets/data/accounts Games/music CD ROM/DVD

How long have you owned a computer at home?.....

Do you have internet access at home? Yes No

Do you use a computer at work? Yes No

If yes...

What do you use a PC at work for? (you may choose one or more of these options)

E-mail Internet Website Data

collection/audit Presentations Word processing/admin Other

What is your level of proficiency with:

	Excellent	Good	Average	Poor	N/A
Word processing:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spreadsheets:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presentations:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Databases:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Statistics software:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you own a PDA (hand-held palm top computer)? Yes No

If so, what do you mainly use your PDA for? (you may choose one, more than one or none at all)

Logbook Patient data Medical reference data Personal diary/address book Other

Do you feel you need more computer training?

Yes No Don't know

If yes...

What do you think you need training in?

Data bases Statistics software Internet/
e-mail Word processing Presentation
software Electronic patient records Other
(please state).....

Do you know where to go if you required more
computer training?

Yes No

*Should undergraduate training include formal
computer training?*

Yes No Not sure

*Should post-graduate training include formal
computer training?*

Yes No Not sure

*Do you feel you have an adequate knowledge
of current data protection requirements?*

Yes No Not sure

*Have you registered with the data protection officer
at your trust?*

Yes No Not sure

*Do you keep identifiable patient data on your personal
computer?*

Yes No N/A

If yes...

How do you protect patient data on your personal
computer?

No protection Apply password to files
Encrypt the data Anonymize the data Other
(please state).....

*Thank you very much for completing this
questionnaire*

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Mr P J Clamp takes responsibility for the integrity of the
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